43459

Patent Application

for

SYSTEM FOR PROVIDING

MULTI-PHASED, MULTI-MODAL ACCESS TO CONTENT

THROUGH VOICE AND DATA DEVICES

by

Masoud Loghmani

This application claims the benefit of U.S. provisional application Serial No.

60/267,207, filed February 8, 2001.

Field of the Invention

[0001]   This invention relates to voice and non-voice access to Internet

Protocol data.   Specifically, the invention relates to a method that reconnects users

with their partially completed sessions using phones through voice, display, or other

communication device.

Background of the Invention

[0002]   Various services now provide voice and non-voice access to Internet

data. A caller may access a "Voice Portal" or "Voice Site" by simply dialing a

number advertised by the company providing the Voice Access service. The caller
will hear a greeting that requests the caller to "speak" or "enter" specific commands.
As an example a caller may ask the system to provide him/her with the latest whether
information by simply speaking a command, or pressing a DTMF button on the
phone. The information provided to the user may be pre-recorded and accessed from a
database, or it may be accessed from a page similar to those available on the Internet.
The mark-up language used to code the page may be VoiceXML or any other type of
XML-based coding language. Some legacy systems may use proprietary or less
commonly used methods for connecting the system to back-end data servers.

[0003] A dropped call occurs when a call session is disconnected before
completion. The reason for session loss can be due to an undesired interruption or by
intentional abandonment. The problem is that there are not existing ways to return to
the call session that was terminated before completion. Users have to begin new
sessions and repeat the steps that they had performed earlier in order to follow a
session through to completion. As an example a caller is making a purchase on his
phone, he selects the merchandise, speaks the shipping and billing address, and then
loses the call. In all existing systems the caller would need to do all that again.

Summary of the Invention

[0004] The present invention allows the caller to call back, identify himself
and continue from where the call was dropped. An alternative possibility is for the
caller to start the purchase by making a call, go through multiple steps, and hang up
when payment information is requested. He will then switch to a data device (e.g.
WAP browser on his phone or a Personal Digital Assistant), and enter the credit card
information through the data device.

[0005]   The present invention also allows the user to go through this process in the reverse order. In other words, the caller could start the process using a WAP browser or a PDA, and then switch to Voice mode.

[0006]   The present invention allows a caller accessing a data source through a voice call or data device to retain the transaction information in between subsequent access sessions whether access originates from a voice device (e.g. Telephone) or data device (e.g. PDA).

[0007]   The method is to keep the data session independent of the medium used to access the data. The data for the transaction session resides in the temporary memory of a computer or is saved in a database on the hard drive or other long-term storage media.

[0008]   The session data is tied to a specific transaction based on identification information for a user. This identification could be accomplished through the use of login/password id, or Caller-ID and Dialed-Number-Identification (DNIS) for phone calls, or cookies for Data devices.

[0009]   When a caller makes the first call to the system, he will identify himself either automatically or manually before starting any transaction. The current invention will register the identification of the caller along with the session data. Session data is saved in the Session Management Gateway (7) in between each step of the transaction. If the caller hangs up prior to completion of transaction the session data will not be lost. When the caller calls back, he is identified once again, and his session will be mapped to the existing one. At that point the caller will be able to continue the same transaction from the point where it was cut-off. A caller could re-establish the same transaction from any point regardless of what device is used

throughout each phase of the transaction. For example, the user could call back with the same mobile phone (1) used to originate the session or use a different device such as an office phone or PDA.

[0010] The reason that this can be accomplished is because the data access session information is separated from the business logic, and is not tied to a specific telephony session or other client interface session. The data interaction session database stores the information for the data layer.

Brief Description of Drawings

[0011] The various aspects, advantages and novel features of the present invention will be more readily comprehended from the following detailed description when read in conjunction with the appended drawings, in which:

[0012] Fig. 1 illustrates a User establishing a session using a mobile phone, hanging up, accessing the same session stored on the database through a Session Management Gateway, and continuing to interact with the application using a data device in accordance with an embodiment of the present invention;

[0013] Fig. 2 illustrates a User establishing a session using a mobile phone, losing the call, but calling again, accessing the same session stored on the database through a Session Management Gateway, and continuing to interact with the application using the mobile phone in accordance with an embodiment of the present invention; and

[0014] Fig. 3 illustrates a caller accessing a proprietary back end data server instead of an application server through the Session Management Gateway in accordance with an embodiment of the present invention.

Detailed Description of Preferred Embodiments

[0015]   With Reference to Figs. 1, 2 and 3, a software-based method is

provided in accordance with the present invention to allow caller to interact with data

and applications in multiple phases using multiple devices or a single device. The

solution comprises four main components, that is,

- a Session Management Gateway (7) capable of interacting with an
  application (9) from the one side (using standard Internet protocols
  for connection to Internet based applications) and multiple client
  interfaces such as a Telephone Interface (3) or a Data Device
  interface (5) from the other side, and also capable of maintaining the
  transaction session with the Application (9) separate from interaction
  sessions with client devices, and capable of maintaining the
  interaction session with the application (9) in a database (8) even if
  no client device is connected at that moment to the session pertaining
  to the said transaction.

- a Data Device Interface capable of interacting with data devices
  equipped with display, keyboard, sound interface, location sensor,
  etc. Data device may have any combination of one or more human or
  machine data sources which can relay user input (e.g. a keyboard) or
  produce data automatically (e.g. a location sensor) as well as modules
  which can present data (e.g. a display that shows the data to a human,
  or a relay that uses the data to control an engine).

- a Telephony Interface that allows callers to access their sessions
  using any type of voice interface devices (e.g. a mobile phone (1)),
  and is capable of presenting the data to the user in audible fashion,

and also capable of collecting input from the user in spoken fashion (spoken commands) as well as other forms such as DTMF input.

- A Database (8) which maintains transaction sessions controlled by Session Management Gateway (7).

[0016] An important aspect of the Session Management Gateway (7) is that it associates each transaction session with a user. A user may be identified by any number of mechanisms such as a pin and password combination that is entered upon accessing the system, or a cookie that is offered to the system once the user data device (4) access the system, or Caller-Id information. When a user accesses the system for the first time, the Session Management Gateway (7) creates a transaction session for the user, and associates user's identification data with the transaction session that was created for that user. Transaction session is stored in a database (8) which may reside in the memory of the computer running Session Management Gateway (7), or on the hard-drive of the same machine, or on a different machine connected to the said computer via a local area network.

[0017] If the user is disconnected from the system without completing the application, the transaction session is kept in the database for a pre-determined period of time. If the user does not connect to the system within the pre-defined period, the session data will be removed. However if the caller connects to the system within the pre-defined period of time, caller will be connected to the same transaction session, and he can continue interacting with the application (9).

[0018] In accordance with another aspect of the present invention, the caller may reconnect to the system using a different device than the one used to establish the original connection.

[0019] In accordance with yet another aspect of the present invention, the Session Management Gateway (7) may handle a multiplicity of transaction sessions at any time.

[0020] In accordance with another aspect of the present invention, the software solution may be implemented using only one client interface (e.g. only Telephony Interface (3)), one Session Management Gateway (7), and a database (8).

[0021] In accordance with yet another aspect of the present invention, a caller may access a proprietary back end data server (10) instead of an application server (9) through Session Management Gateway (7).

[0022] Although the present invention has been described with reference to a preferred embodiment thereof, it will be understood that the invention is not limited to the details thereof. Various modifications and substitutions have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. All such substitutions are intended to be embraced within the scope of the invention as defined in the appended claims.